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(54) CONNECTING MEANS FOR CONNECTING FLEXIBLE SYNTHETIC
RESIN PARTS, FOR EXAMPLE PARTS OF A DOLL

(71) We, NAKAJIMA SEISAKUSHO CO., LTD., a Japanese Company, of 7—8, Chuo 1-Chome, Edogawa-Ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to synthetic resin connecting means, and more especially to such means for connecting the parts of a doll against inadvertent separation of the parts while providing an articulated joint allowing the parts to be moved relative to each other by the user.

There have been proposed a great variety of connecting means for connecting parts of synthetic resin dolls together. However, many of the prior art connecting means are unreliable and the doll parts connected together by such connecting means frequently separate from each other when in use. In order to prevent the doll parts from inadvertently separating from each other, some improvements have been made in the connecting means for synthetic resin doll parts. However, such improvements inevitably add further steps to the process for producing such connecting means resulting in increased cost.

Therefore, one object of the present invention is to provide an improved articulated joint suitable for connecting the parts of e.g. a synthetic resin doll and having an increased resistance to separation of the parts of the doll etc. during play.

The invention accordingly provides an articulated joint comprising a first part of flexible synthetic resin defining a connector portion having an aperture surrounded by a generally cylindrical outer rim, said outer rim having a peripheral groove or recess; a first insert member of more rigid material than said first part and comprising a sleeve portion fitting over said outer rim and an intumed flange engaging said peripheral groove or recess; a second insert

member of more rigid material than said first part and comprising a centre portion fitting within said aperture of said first part and a peripheral portion extending from said centre portion outwardly around said outer rim and overlying and being secured to said sleeve portion of said first insert member; and a second part of flexible synthetic resin having an internal groove or recess receiving the insert assembly formed by said first and second insert members.

It will be seen that the insert assembly incorporated in a joint according to the invention effectively provides internal and external bracing of the outer rim of the first part of the joint so that the tendency of the parts to be separated by flexing of said rim is reduced.

The invention is illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a perspective elevational view of a doll having parts connected together by connecting means made in accordance with the present invention;

Fig. 2 is a fragmentary exploded perspective view of said doll of Fig. 1 especially showing the connecting portions of the body and arm parts and related connecting means of the doll;

Fig. 3 is an exploded cross-sectional view showing connecting means which connect one arm part to the body part;

Fig. 4 is a cross-sectional view showing the manner in which one arm part is connected to the body part;

Fig. 5 is an exploded cross-sectional view showing connection means which connect the head part to the body part;

Fig. 6 is a cross-sectional view showing the manner in which the head part is connected to the body part; and

Fig. 7 is a cross-sectional view showing the manner in which one leg part is connected to the body part.

The present invention will be now described in detail referring to the accompany-

ing drawings which illustrate one preferred form of connecting means. The doll is shown in the form of a child and generally comprises the hollow body part 1, the hollow head part 2, the hollow arm parts 3 and the hollow leg parts 4 as its principal parts which are connected together by means of connecting means of the invention as will be described in detail hereinafter. All the body, head, arm and leg parts 1, 2, 3 and 4 of the doll are formed of the same relatively soft flexible synthetic resin and the connecting means are formed of relatively hard less flexible synthetic resin.

The body part 1 has an integral cervical part 5 in the open upper portion of circular cross section and the cervical part is provided in the outer periphery with an annular recess 6 between the lower end which curves downwardly and outwardly and merges in the rest of the body part 1 and the enlarged diameter upper end which forms an annular flange 7 for the purpose to be described hereinbelow. The open lower portion of the head part 2 has a reduced diameter opening 8 which is in communication with the hollow interior of the rest of the head part 2 and opens downwardly and an annular recess 9 in a mid-point of the height of the opening for the purpose to be described hereinbelow. The connecting means which connect the head part 2 to the body part 1 comprise a first insert member 10, which includes a circular bottom 11 provided with a center opening 13 which has a diameter substantially the same as that of the annular recess 6 in the cervical part 5 and an upright peripheral wall 12, and a second insert member 20 which has an outer diameter substantially the same as that of the annular recess 9 and includes a circular bottom 21, an inner upright peripheral wall 22 extending upwardly from the peripheral edge of the bottom and an outer peripheral wall 23 connected at the upper end to the upper end of the inner peripheral wall 22 by means of a horizontal annular portion 24. The diameter of the bottom 21 is made smaller than the inner diameter of the outer peripheral wall 23 so as to define an annular opening 25 which opens downwardly for the purpose to be described hereinbelow. The diameter of the bottom 21 of the second insert member 20 is also smaller than that of the opening 13 in the bottom 11 of the first insert member 10 for the purpose as will be described hereinbelow. The outer diameter of the upright peripheral wall 12 of the first insert member 10 is substantially the same as the inner diameter of the outer peripheral wall 23 of the second insert member 20. The first and second insert members 10 and 20 are assembled together by fitting the outer peripheral wall 23 of

the second insert member 20 on the peripheral wall 12 of the first insert member 10 and securing the walls together employing any suitable adhesive so as to form a unitary insert assembly. In connecting the body part 1 and head part 2 together employing the thus formed insert assembly, the first insert member portion 10 of the insert assembly is first forcibly fitted on the cervical part 5 until the bottom 11 of the insert member seats in the annular recess 6 in the cervical part and thereafter, the second insert member portion 20 of the insert assembly is forcibly fitted in the annular recess 9 in the lower portion of the head part 2 or vice versa thereby to connect the head part 2 to the body part 1. Such connecting operation can be simply and efficiently effected by virtue of the fact that the material of the body and head parts 1 and 2 is more flexible than the material of the insert members 10 and 20 and yields under the force required to fit the insert members 10 and 20 on and in the body and head parts 1 and 2, respectively. Nevertheless, once the body and head body parts have been connected together in the manner mentioned above, these parts will not inadvertently separate from each other while being used.

The arm parts 3 are connected to the body part 1 in the same manner as described hereinabove in connection with the connection of the head part 2 to the body part 1 employing similar insert members. For the purpose, each of the shoulder portions of the body part 1 is provided with a vertically disposed first circular opening 30 and a second reduced diameter opening 31 in communication on the inner side with the first opening 30 and opening on the outer side. The upper end portion of each of the shoulder parts 3 is formed with an annular recess 32 and a flange 33. In connecting each of the arm parts 3 to the body part 1, an insert assembly identical with that as described in connection with the connection of the head part 2 to the body part 1 can be employed. Therefore, the diameter of the openings 30 in the body part 1 is substantially the same as the outer diameter of the second insert member 20 and the outer diameter of the flange 33 is substantially the same as the diameter of the hollow interior of the first insert member 10. When it is desired to connect the arm part 3 to the body part 1, the first insert member 10 is first forcibly fitted on the arm part 3 until the bottom 11 of the insert member seats in the recess 32 in the arm part 3 and the second insert member 20 is then forcibly fitted in the opening 30 of the body part 1 until the second insert member is completely received in the opening 30. Thus, the arm part 3 can be connected to the body part 1

against inadvertent separation from the latter.

For connecting the leg parts 4 to the body part 1, the lower portion the body part 1 is provided with a pair of annular recesses 34 (only one of the recesses is shown in Fig. 7) in opposite positions thereof and a pair of reduced diameter openings (not shown) in communication on the inner side with the associated recesses 34 and opening on the outer side and the upper end portion of each of the leg parts 4 is provided with an annular flange 35 at the extreme end and an annular recess (not shown) positioned inwardly of the flange. The connecting means for connecting each of the leg parts 4 to the body part 1 is also identical with that described in connection with the connection of the head part 2 to the body part 1 and accordingly, the diameter of the openings 34 is substantially the same as that of the second insert member 20 and the diameter of the annular recesses in the leg parts 4 is substantially the same as that of the center opening in the first insert member 10. In connecting each of the leg parts 4 to the body part 1, the first insert member portion of the insert assembly is first forcibly fitted on the leg part 4 until the bottom 11 of the first insert member 10 seats in the recess in the leg part and the second insert member portion of the insert assembly is then forcibly fitted in the body part until the insert member seats in the opening 34 of the body part 1. In this way, the body part 1, the head part 2, the arm parts 3 and the leg parts 4 are connected together against inadvertent separation from each other while allowing the parts to move relative to each other to obtain a complete doll in the form of a child as shown in Fig. 1.

Since the connecting means connect the various parts of the doll together against inadvertent separation from each other, but still allow the user to move the parts relative to each other, in playing with the doll, the user can move the doll parts in any desired manner at will. Furthermore, since the connecting means seal off the openings in the connected portions of the doll parts, the connecting means concurrently serve as means for preventing water and the like from penetrating into the hollow interiors of the connected doll parts. Although description has been made in connection with an instance in which the connecting means of the invention is employed for connecting the parts of a simulated human doll together,

the connecting means can be also widely employed for connecting various parts of simulated animal and other shape dolls. Furthermore, since the connecting means of the invention are simple in construction and can be produced on a mass production scale, it will be apparent to those skilled in the art that the invention will contribute to the industry to which the invention pertains.

In the foregoing, the invention has been described with reference to a specific illustrative embodiment. It will be evident, however, that variations and modifications as well as the substitution of equivalent parts or elements for those shown herein for illustration, may be made without departing from the broader scope of the invention as set forth in the appended claims. The specification and drawings are accordingly to be regarded in an illustrative rather than in a restrictive sense.

WHAT WE CLAIM IS:—

1. An articulated joint comprising a first part of flexible synthetic resin defining a connector portion having an aperture surrounded by a generally cylindrical outer rim, said outer rim having a peripheral groove or recess; a first insert member of more rigid material than said first part and comprising a sleeve portion fitting over said outer rim and an intumed flange engaging said peripheral groove or recess; a second insert member of more rigid material than said first part and comprising a centre portion fitting within said aperture of said first part and a peripheral portion extending from said centre portion outwardly around said outer rim and overlying and being secured to said sleeve portion of said first insert member; and a second part of flexible synthetic resin having an internal groove or recess receiving the insert assembly formed by said first and second insert members.

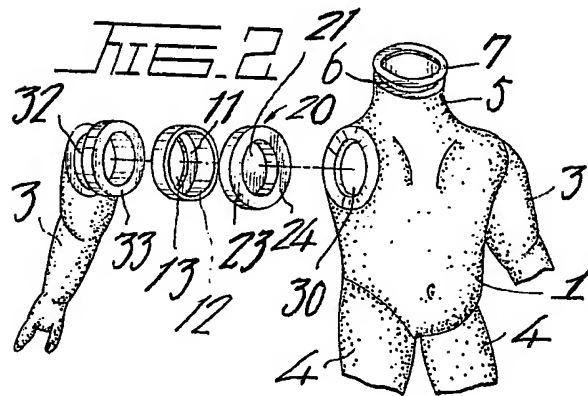
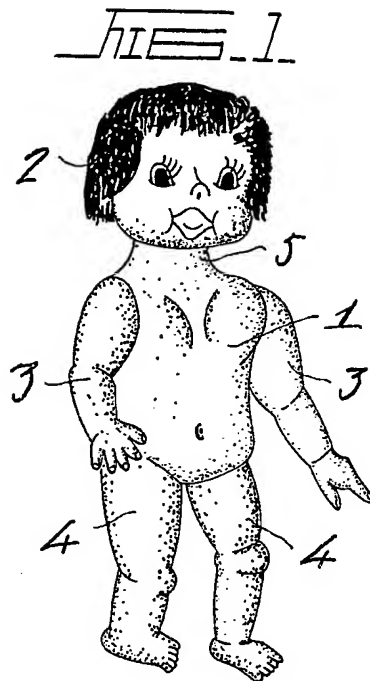
2. A joint as claimed in Claim 1, substantially as described herein with reference to the accompanying drawings.

3. A doll including a joint as claimed in Claim 1 or 2.

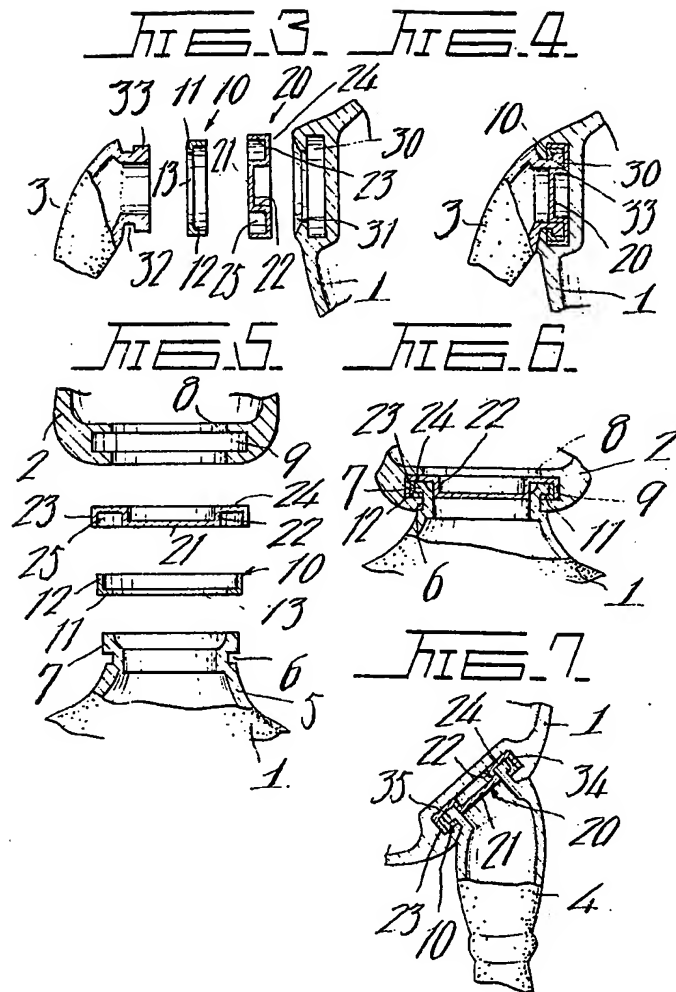
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